Extracts from Publications.

Atmospheric Refraction Irregularities.—The anomalies of atmospheric refraction are numerous, and at various times irregularities extending over periods of one minute, one day, and one year have been discussed, that of the order of one second being generally known and causing "unsteady seeing." The variation of the order of one minute was discovered by Nusl and Fric experimentally in 1908, and they concluded that this irregularity had an amplitude of nearly a second of arc. The existence of such a large amplitude and its importance in meridional work suggested to Professor Frank Schlezinger, a re-determination by a perfectly independent method, and this he has done and described in a recent number of the Publications of the Allegheny Observatory (Vol. III, No. 1). He has based his measures on photographs of ordinary star trails made with the help of stationary long-focus instruments, and these he has had secured for him, according to a programme by Professor Slocum with the 40-in. Yerkes refractor and Professor Seares with the Mount Wilson 60-in. reflector, the star trails being those of the Pleiades group. The result deduced from the Yerkes plates, as is illustrated by curves in the publication, is to show the presence of this slow fluctuation, every one of the seven trails remaining at times above or below its mean position for a considerable fraction of a minute.

The same series of photographs was used to determine whether neighbouring stars showed the same fluctuations and whether the minor fluctuations were real. The curves plotted from these photographs thoroughly endorsed both these views, one figure showing the fluctuations of Merope and Alcyone as absolutely identical. To decide whether such one-minute fluctuations were common to mountain sites as well as to low-lying situations, the Mount Wilson photographic trails were employed, and handled in the same way. The conclusion drawn was that the irregularities were of the same character, the amplitude being of the same order and the extreme range about one second of arc. Professor Schlezinger thus directs attention to the fact that these results set a limit of accuracy to meridian work and show that photographic determinations of the distance between two widely separated objects are much more accurate than micrometer (excluding double image or heliometer) observations with the same instruments, because the former are affected alike, the same time element being common to both.

[*Nature.*